



wherein

R¹ is H, F, CN, CH₃, or C₁₋₆ fluoroalkyl,

R^{2a} and R^{2b} are independently H or F, and

AB
cont

R³ is CN or COOR, wherein R is selected from the group consisting of H, C₁₋₁₂ alkyl and C₁₋₁₂ fluoroalkyl, or is selected so as to render R³ acid-cleavable; and
a second monomer having the structure of formula (II)



wherein

R⁴ is H, C₁₋₁₂ alkyl, C₃₋₁₅ alicyclic, or fluorinated C₃₋₁₅ alicyclic,

R⁵ is C₁₋₁₂ alkyl, C₁₋₁₂ alkyl substituted with 1-12 fluorine atoms and 0-2 hydroxyl groups, or C₃₋₁₅ alicyclic, or R⁴ and R⁵ together form a five-, six-, or seven-membered ring,

R⁶ is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or R⁴ and R⁶ together form a five-, six-, or seven-membered ring, and

R⁷ is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or R⁷ and R⁵ together represent -X-(CR⁸R⁹)_n-, in which case R⁴ and R⁶ are H, X is O or CH₂, n is 1 or 2, R⁸ and R⁹ are H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or together form an oxo moiety (=O), with the proviso that when R⁸ and R⁹ together form =O, n is 1,

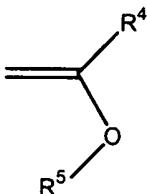
wherein any of R¹, R³, R⁴, R⁵, R⁶, and R⁷ may be further substituted with an inert, nonhydrogen substituent.

2. (Amended) The copolymer of Claim 29, wherein R¹ is CF₃.

14. (Amended) The copolymer of Claim 13, wherein R is selected from the group consisting of 2-methyl-2-adamantyl, 2-methyl-2-isobornyl, 2-methyl-2-tetracyclododecanyl, 2-methyl-2-dihydrodicyclopentadienyl-cyclohexyl, 1-methylcyclopentyl, and 1-methylcyclohexyl.

15. (Amended) The copolymer of Claim 1, wherein the second monomer has the structure of formula (III)

(III)

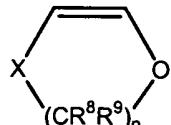


wherein:

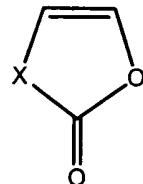
 R^4 is H, C₁₋₁₂ alkyl, C₃₋₁₅ alicyclic, or fluorinated C₃₋₁₅ alicyclic; and R^5 is C₁₋₁₂ alkyl, C₁₋₁₂ alkyl substituted with 1-12 fluorine atoms and 0-2 hydroxyl groups, or C₃₋₁₅ alicyclic.

16. (Amended) The copolymer of Claim 1, wherein the second monomer has a structure selected from the group consisting of (IV), (V), and (VI)

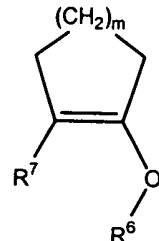
(IV)



(V)



(VI)



wherein:

 R^6 is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl; R^7 is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl;

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X is O or CH₂;

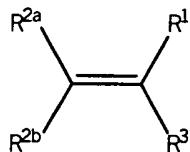
m is an integer between 1 and 3; and

R⁸ and R⁹ are H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl.

23. (Amended) A process for generating a resist image on a substrate, comprising the steps of:

(a) coating a substrate with a film of a photoresist comprised of a radiation-sensitive acid generator and a copolymer synthesized from a first monomer having the structure of formula (I)

(I)



wherein

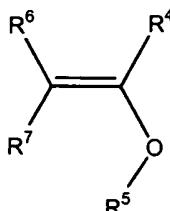
R¹ is H, F, CN, CH₃, or C₁₋₆ fluoroalkyl,

R^{2a} and R^{2b} are independently H or F, and

R³ is CN or COOR, wherein R is selected from the group consisting of H, C₁₋₁₂ alkyl and C₁₋₁₂ fluoroalkyl, or is selected so as to render R³ acid-cleavable, with the proviso that when R³ is CN, then R¹ is CF₃ and R^{2a} and R^{2b} are H; and

a second monomer having the structure of formula (II)

(II)



wherein

R⁴ is H, C₁₋₁₂ alkyl, C₃₋₁₅ alicyclic or fluorinated C₃₋₁₅ alicyclic,

R⁵ is C₁₋₁₂ alkyl, C₁₋₁₂ alkyl substituted with 1-12 fluorine atoms and 0-2 hydroxyl groups, or C₃₋₁₅ alicyclic, or R⁴ and R⁵ together form a five-, six-, or seven-membered ring,

R⁶ is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or R⁴ and R⁶ together form a five-, six-, or seven-membered ring,

R⁷ is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or R⁷ and R⁵ together represent

AS CX
AS CX

-X-(CR⁸R⁹)_n-, in which case R⁴ and R⁶ are H, X is O or CH₂, n is 1 or 2, R⁸ and R⁹ are H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or together form an oxo moiety (=O), with the proviso that when R⁸ and R⁹ together form =O, n is 1,

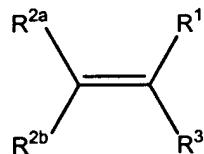
wherein any of R¹, R³, R⁴, R⁵, R⁶, and R⁷ may be further substituted with an inert nonhydrogen substituent;

(b) exposing the film selectively to a predetermined pattern of radiation so as to form a latent, patterned image in the film; and

(c) developing the latent image with a developer.

24. (Amended) In a lithographic photoresist composition comprised of a polymer transparent to deep ultraviolet radiation and a radiation-sensitive acid generator, the improvement comprising employing as the polymer a copolymer synthesized from a first monomer having the structure of formula (I)

(I)



wherein

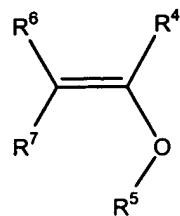
R¹ is H, F, CN, CH₃, or C₁₋₆ fluoroalkyl,

R^{2a} and R^{2b} are independently H or F, and

R³ is CN or COOR, wherein R is selected from the group consisting of H, C₁₋₁₂ alkyl and C₁₋₁₂ fluoroalkyl, or is selected so as to render R³ acid-cleavable, with the proviso that when R³ is CN, then R¹ is CF₃ and R² is H, and

a second monomer having the structure of formula (II)

(II)



wherein

BS
DMT

R⁴ is H, C₁₋₁₂ alkyl, C₃₋₁₅ alicyclic, or fluorinated C₃₋₁₅ alicyclic,

R⁵ is C₁₋₁₂ alkyl, C₁₋₁₂ alkyl substituted with 1-12 fluorine atoms and 0-2 hydroxyl groups, or C₃₋₁₅ alicyclic, or R⁴ and R⁵ together form a five-, six-, or seven-membered ring,

R⁶ is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or R⁴ and R⁶ together form a five-, six-, or seven-membered ring;

R⁷ is H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or R⁷ and R⁵ together represent -X-(CR⁸R⁹)_n-, in which case R⁴ and R⁶ are H, X is O or CH₂, n is 1 or 2, R⁸ and R⁹ are H, C₁₋₁₂ alkyl, or C₁₋₁₂ fluoroalkyl, or together form an oxo moiety (=O), with the proviso that when R⁸ and R⁹ together form =O, n is 1,

wherein any of R¹, R³, R⁴, R⁵, R⁶, and R⁷ may be further substituted with an inert nonhydrogen substituent.

Add new claims 29-31 as indicated in Appendix C. The new claims are reproduced below:

29. (New) The copolymer of claim 1, wherein R¹ is H, F, CN, CH₃, CF₃, CF₂H, or CFH₂.

30. (New) The copolymer of claim 29, wherein at least one of R¹, R³, R⁴, R⁵, R⁶, or R⁷ is further substituted with an inert nonhydrogen substituent.

31. (New) The copolymer of claim 30, wherein the inert nonhydrogen substituent is selected from the group consisting of F, C₁₋₁₂ alkyl, C₁₋₁₂ alkoxy, C₁₋₁₂ alkenyl, C₁₋₁₂ alkenyloxy, C₁₋₁₂ fluoroalkyl, C₁₋₁₂ fluoroalkoxy, and C₁₋₁₂ fluoroalkenyl.

REMARKS

With the present amendment, claims 1, 2, 14-16, 23, and 24 have been amended and new claims 29-31 have been added. The amendments and new claims find support throughout the original disclosure, as indicated in the following table:

CLAIM(S)	CLAIM ELEMENT (PREVIOUSLY RECITED ELEMENTS NOT INCLUDED)	LOCATION OF SUPPORT
1, 23, and 24	R ¹ is H, F, CN, CH ₃ , or C ₁₋₆ fluoroalkyl.	Page 5, line 2.
1, 15, 23, and 24	R ⁴ is H, C ₁₋₁₂ alkyl, C ₃₋₁₅ alicyclic, or fluorinated C ₃₋₁₅ alicyclic.	Page 5, line 10.